DCCUMENT RESUME

ED 050 155 TM 000 546

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TITLE Type of Highlighted Material and Examination Performance.
INSTITUTION Illinois State Univ., Normal.
PUB DATE Feb 71
NOTE 9p.; Paper presented at the Annual Meeting of the American Educational Research Association, New York, New York, February 1971

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS Autoinstructional Aids, *Content Reading, *Cues, Instructional Materials, *Learning Processes, Printing, *Recall (Psychological), *Testing
IDENTIFIERS *Isolation Effect

ABSTRACT

The present study asked whether laboratory findings that isolation of an item facilitates its recall extended to formal educational settings. Four groups of students from a General Psychology class were differentiated in terms of the type of material which was isolated in assigned readings. Principles, examples of principles, or trivial statements were selected for isolation by underlining, while readings of the remaining group did not contain underlinings. Class examinations included questions directed at knowledge of each type of material. Slight support was obtained for the prediction that exam performance on a particular type of material depended upon whether the material was isolated. There was no evidence for an overall facilitation by isolation. That is, underlining of one type of material did not appear to aid exam performance on nonisolated materials. (Author)

ED050155

American Educational Research Association Meeting, New York, February 1971

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Type of Highlighted Material and Examination Performance

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TYPE OF HIGHLIGHTED MATERIAL AND EXAMINATION PERFORMANCE

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Von Restorff (1) was among the first to note that isolation of an item against an homogeneous background facilitated recall of the item. Subsequent laboratory studies of the effect have typically included one condition in which a word midway in a list is printed in a color different from that of remaining items, a comparison condition involving presentation of the same word in the same list but with all list units printed in the same color. An isolation effect is said to have occurred if recall of the item is superior when the item is printed in a different color than when it is printed in like color.

Concomitant with laboratory studies are frequent attempts at application of isolation-effect findings, e.g., use of italics or bold-face type in texts. Nevertheless, systematic studies of the isolation effect in formal educational settings are rare. One recent exception (2) found that students in a General Psychology course who had reading materials with principles underlined in red better answered examination questions on the principles, as well as questions on adjacent materials, than did students whose readings did not contain the underlinings. The present study extended the prior work by including, not only underlining of principles, but also underlining of principles and underlining of trivial statements. In addition, exam questions were directed at knowledge of principles, examples of principles, and trivial content. A first excep-

tation was that overall performance on assigned materials would vary with the particular isolation condition. Presumably, more questions would be answered correctly when principles or examples of principles were underlined than when either trivial statements or nothing was underlined. Underlining of trivia was expected to result in poorest overall performance, highlighting of trivia distracting the student from principles which could be used to organize remaining materials. Secondly, we expected that exam performance on a particular type of material would depend upon whether the particular material had been underlined, e.g., if principles had been highlighted, more questions on principles would be answered correctly than if either examples or trivia had been underlined.

Method

Design and Subjects.--Underlining condition (principles, examples, trivia, or nothing underlined) constituted a "between-S" factor, type of exam question (questions on principles, examples, trivia) a "within-S" factor. Subjects were 164 General Psychology students at Illinois State University, 41 students per underlining condition.

Materials and Procedure.---Each student received a mimeographed copy of each of four Scientific American reprints. Four principles, four examples of principles, and four trivial statements from each of the reprints were identified for underlining purposes. Statements of principles were inclusive in nature and described fundamentals, e.g., "....higher organisms actively avoid a completely monotonous environment." Examples were intended as illustrations of principles, e.g., "A rat in a maze will use different routes to food." Trivial statements typically consisted of reporting of procedural details of the research

dealt with in the reprint, e.g., a statement about the strain of rat used. Decisions as to whether a particular statement represented the intended type of material were made using the jury technique. Underlinings were distributed fairly evenly throughout each reprint. For a given student the same type of statement was always underlined, i.e., each student served in but one underlining condition. Unbiased assignment to underlining conditions was accomplished by randomly arranging the sets of four reprints, with students picking up their sets of reprints as they left class. To minimize discovery of the nature of the conditions, each reprint was covered by a face page. Reprints were not discussed in class, except to inform students that questions on the reprints would be included on regular class examinations and that they were not to write in the reprints since they might see future use. Questions on reprints were interspersed among questions originating from text and lecture. For each reprint, four multiple-choice questions were constructed for each type of material selected for underlining. Hence, the number of questions on each type of material was 16.

Results and Discussion

Mean total questions answered correctly was 31.68, 31.87, 32.65, and 31.21 for the principles-, examples-, trivia-, and nothing-underlined conditions, respectively, differences among the means not being statistically significant, F (3, 160) <1. More questions were answered correctly on principles (mean = 11.55) than on examples (mean = 10.59) or trivia (mean = 9.71), the differences being statistically significant, F (2, 320) = 56.62, p <.01. The interaction of underlining condition and type of tested material was marginally significant, F (6, 320) = 2.00, .10 >p >.05. The pattern of results contributing to the marginal

interaction is presented in Table 1. Examination of the table shows that test performance on each type of material was best in the isolation condition in which the material was underlined. Thus, the prediction that performance on a particular type of material would depend upon whether the material had been underlined was given tenuous support.

The prior finding (2) that isolation of principles facilitated answering of questions on materials adjacent to principles as well as the principles was not replicated, in light of the failure to find an effect of isolation condition on mean total questions answered correctly. The marginal interaction of underlining condition and type of material indicates that isolation has a role in formal educational settings, albeit a small one. In general, the slight evidence for an effect of isolation condition makes the extrapolation of laboratory findings on the isolation effect to formal educational settings questionable.

Two additional points deserve mentioning. First, the failure to replicate the previous finding of an overall facilitation by isolation might be attributable to differences in the degree of student interchange about the isolation conditions in the two studies. The previous study was conducted during a Summer session on a class of only 40 students. If we assume that student communication about the study is more likely in a large than in a small class, then the likelihood that the "word got out" was greater in the present study. In addition, students enrolled in the Summer session are typically not localized in terms of living quarters. In contrast, students in the present study were enrolled in the typical sumester term for which many students from a given class will frequently occupy the same dormitory floor. Hence, the social conditions of the present study were such as to increase the likelihood

of communication about the conditions of the study. If much interchange occurred, differences in the isolation conditions would have been somewhat nullified. Secondly, the possibility that differences among conditions were minimized because of student-initiated underlining can be excluded. Students were told not to mark in the booklets. A sampling of the returned reprints indicated that the instructions were followed.

References

1. von Restorff, H. Über die Virkung von Bereichsbildungen in Spurenfeld. Psychologie Forschung, 1933, 18, 299-342.

2. Cashen, V. M., and Leicht, K. L. Role of the isolation effect in a formal educational setting. Paper presented at the meeting of the American Educational Research Association, Minneapolis, Minnesota, 1970.

Table 1

Mean Correct (SDs in parentheses) for Each Underlining Condition and Each Type of Tested Material

		Tested Material		
		Principles	Examples	Trivia
Underlined Material	Principles	11.68 (2.44)	10.54 (2.06)	9.46 (2.36)
	Examples	11.27 (2.48)	10.83 (2.31)	9.78 (2.37)
	Trivia	11.67 (2.13)	10.54 (1.86)	10.44 (2.01)
	Nothing	11.56 (2.44)	10.49 (2.30)	9.17 (2.41)